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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of

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Federal-State Joint Board on
Universal Service

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CC Docket No. 96-45

FURTHER COMMENTS

of the

RURAL TELEPHONE COALITION

August 9, 1996

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SUMMARY

The record in this proceeding shows that broad application of a mathematical cost proxy model to universal service policy would be premature. Clearly, more study is required before the total impact of the application of the proposed models is fully understood. Further, it must first be determined whether the intended purpose of any of the proposed models is appropriate for defining the costs of providing universal service support. Currently, there is a lack of consistency among the sponsors and commenting parties concerning the intended purposes of the models. While the Benchmark Cost Model is claimed to have been developed for high-cost targeting purposes only, the other sponsors claim that their models are intended to assess actual cost recovery requirements.

According to preliminary reviews, it appears that the three proposed models continue to produce results with the greatest inaccuracy for the highest cost areas. Unless and until it can be shown that a model can accurately represent the costs incurred in serving rural areas, the Commission cannot conclude that a universal service support system based upon proxies meets the 1996 Act's requirements that support mechanisms be sufficient and predictable.

The sponsors of the proposed models claim that recent revisions have increased the accuracy with which the models can predict costs. However, proper testing and evaluation of the models must involve actual engineering studies, else the accuracy of the

models cannot be determined. Potential proxy errors are particularly dangerous for small and rural companies, and a mandatory application of a model would be improper without proof of its accuracy and reliability.

Lingering problems are inherent in assumptions which underlie the models. The BCM is defective because it, even now, does not adequately recognize the impact of terrain conditions on costs. The inclusion of residential and business lines in all models is appropriate but is not treated consistently in the various models. Additionally, the models' switch/technology assumptions require further evaluation.

The Commission must continue to recognize the unique circumstances surrounding small and rural companies. Should the Commission decide to experiment with use of a model for universal service support, it must provide for some form of bifurcation whereby companies operating in high-cost service areas may choose to use their actual costs. No model which is administratively feasible can also account for the multiple variables that determine the actual cost of serving a given area, and this problem is particularly true of rural areas. Mandated use of any proxy for rural telephone companies does not provide the needed flexibility for underpredictions of cost, and therefore cannot meet the support requirements established in the Telecommunications Act of 1996.

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FURTHER COMMENTS
of the
RURAL TELEPHONE COALITION

The Rural Telephone Coalition ("RTC") submits the following comments in response to the Commission's *Public Notice*, DA 96-1094, released on July 10, 1996, inviting further comments on the cost models proposed in the above-captioned proceeding.¹ This proceeding is examining implementation of the universal service provisions contained predominantly, but not entirely, in Section 254 of the Telecommunications Act of 1996 ("Act"). The two cost models were submitted early in the proceeding for consideration by the Commission. Pacific Telesis submitted the Cost Proxy Model ("CPM"), and MCI Communications Inc., NYNEX Corporation, Sprint Corporation, and US West resubmitted the Benchmark Cost Model ("BCM") that they

¹ The Rural Telephone Coalition is comprised of the National Rural Telecom Association (NRTA), the National Telephone Cooperative Association (NTCA), and the Organization for the Promotion and Advancement of Small Telecommunications Companies (OPASTCO). The RTC filed joint comments and replies on April 12 and May 7, 1996, in response to the *Notice of Proposed Rulemaking and Order Establishing Joint Board* released on March 8, 1996. The RTC also filed further comment on August 2, 1996, in response to the 72 specific questions released on July 3, 1996.

had prepared for CC Docket No. 80-286. In addition, AT&T Corporation submitted a cost proxy model prepared by Hatfield Associates, Inc., in CC Docket No. 96-98.

According to the *Public Notice*, two additional or revised models have been recently filed: the Benchmark Cost Model 2 ("BCM2") was filed on July 3, 1996, by Sprint Corporation and US West, and on July 5, 1996, MCI Communications Inc. and AT&T Corporation submitted the Hatfield Model, Version 2.2, Release 1 ("Hatfield 2.2"). The *Public Notice* states that the two revised models, along with the CPM and the earlier BCM, will be carefully considered by the Federal-State Joint Board as it formulates its recommendations concerning the provision of Universal Service.²

The RTC urges the Commission to recognize that broad application of one or more of these mathematical models to universal service policy would be premature. The revised versions presented for comment were submitted to the Commission only recently, and they involve a set of extremely complex assumptions and data collections. While the RTC is able to offer the preliminary analysis presented below, more study is clearly required before the total impact of the application of these models is fully understood. It is critical that the Commission continue to recognize the unique circumstances surrounding small and rural companies. Premature application of a proxy model that has not been thoroughly analyzed and tested could be detrimental to small and rural companies which serve high-cost areas and therefore, harmful to the preservation and

² *Public Notice* at 1.

advancement of universal service, as required by the Telecommunications Act of 1996.³

I. THE COMMISSION MUST SPECIFY A CLEAR PURPOSE FOR USING PROXY RESULTS.

The first step in evaluating the proposed models is to define the precise purpose and intended use for such a “model.” The Joint Board and the Commission cannot evaluate the comments on any proposal, let alone compare the four pending proposals, without establishing the purpose for developing a model and a common vocabulary for discussing the purpose and potential effectiveness of proposed models. The record so far discloses that the parties and the Commission are not speaking the same language or pursuing the same end.

Defining the purpose clearly is also a prerequisite for determining whether a model is valid. The purpose and intended use must be the source for the standard applied to verify that the model can successfully perform the desired task. The questions to be answered are, first, what the model is supposed to do and, second, whether the model successfully does what it is intended to do.

It is still unclear whether the claimed or underlying purposes of the different models are appropriate for defining universal service support.⁴ The RTC has previously stressed the important difference between the identification of high cost and the

³ 47 U.S.C. § 254.

⁴ A clearly defined purpose for any model developed for use in conjunction with universal service support is essential. However, the validity of underlying assumptions as well as a thorough testing of model results are equally important. This is discussed, infra, p. 9.

quantification of high cost:

The difference is critically important when examining the potential distortion that inaccurate proxies present to the industry and marketplace . . . A model that is only qualitative cannot serve as a quantitative model.⁵

In its April 12 comments, US WEST maintained that the original BCM was the result of efforts by a number of industry players to develop a tool for *targeting* high-cost support.⁶ US West stated that while a proxy model approach makes sense within the context of targeting Federal high-cost support dollars, the BCM results are not the appropriate standard for the pricing of services. In order to meet historical carrier-of-last resort obligations, incumbent LECs have incurred many costs. These costs should be recovered, US WEST explained, through a “combination of service prices at the federal and state level, as well as federal and state explicit high-cost funds.”⁷ Documentation filed in conjunction with the BCM2 states the same purpose: “Sprint and US WEST remain convinced that the results of BCM2, by themselves, are not appropriate for the pricing of telephone service.”⁸ US WEST recognizes the following:

. . . our choice of model is one that would not cover the full costs which LECs experience in providing basic universal service today. These costs are represented in the Table above by the embedded cost, and reflect investments prudently made

⁵ See Comments of the RTC at 105-109, October 10, 1995.

⁶ See Comments of US West at 13, April 12, 1996.

⁷ US WEST at n. 25.

⁸ See *Benchmark Cost Model: A Joint Submission by Sprint Corporation and US WEST, Inc.* at 2, July 3, 1996.

in prior years, upon which LECs are entitled to earn full recovery.⁹

It is evident from other comments filed, however, that several parties assume that the BCM should serve a larger purpose than that for which it was designed. For example, Time Warner Communications states the following:

The NPRM recognizes the value of implementing a cost proxy model to *determine the level of subsidy* required to bring services priced at affordable levels to consumers in high cost areas. Time Warner supports the Commission's tentative conclusion that if properly structured, a cost proxy approach would be a more effective way to determine assistance than the current approach. An objective assessment of the costs of serving 'allegedly' high cost areas can be accomplished through the development of standardized cost proxies." (emphasis added)¹⁰

Sponsors of the Hatfield 2.2 claim that a proxy cost model can be used to assess *economic subsidy requirements* in addition to "computing efficient total network costs ... [and] the economic costs of the individual network elements that are used to provide narrowband telephone services."¹¹ Hatfield 2.2 purports to identify those areas in which the total service long-run incremental cost (TSLRIC) of basic local service exceeds the tariffed rate for that service and to quantify any resultant economic shortfall.¹²

The Common Carrier Bureau's statement that it is carefully considering models proposed for such different purposes as the BCM versions and the two Hatfield versions

⁹ US WEST at 16.

¹⁰ See Comments of Time Warner Communications at 11, April 12, 1996.

¹¹ See Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 1, CC Docket No. 96-98, May 16, 1996.

¹² *Id.* at 4.

necessarily raises substantial concern about which purpose the Commission intends a model adopted here to serve. Comparing models with such widely disparate purposes to each other is *clearly inappropriate*. Even more disturbing is the fact that the Hatfield model employs some of the *targeting* BCM1 outputs as input for calculating economic subsidy requirement assessments,¹³ in effect merging models that do not claim to predict or quantify the same thing. Thus, Hatfield 2.2 uses a model meant only to identify relative costs as input for a model purporting to quantify costs for cost recovery purposes.

The Cost Proxy Model (CPM) proposed by Pacific Bell is also presented as a model by which “to *determine a Universal Service provider’s subsidy funding requirements* using cost proxies for basic services.”¹⁴ Thus, while the BCM2 appears to be aimed only at targeting high cost areas, sponsors of the other models claim more precise and far reaching pricing-specific purposes. The Commission must correct the current absence of a clearly defined and justified concept underlying whatever valuation or allocation of high costs any proxy model considered in this proceeding would be intended to predict. Until this step has been taken, any move to develop a universal service mechanism based solely upon results of a model is not justifiable. Indeed, until the Commission has crystallized the purpose for developing a model, it cannot know how to test any model’s validity as to the Commission’s purpose.

¹³ *Id.* at 8-9.

¹⁴ *See Cost Proxy Model: Universal Service Edition - User Manual* at 2-1, May 10, 1996. (emphasis added)

It is also necessary to establish whether the desired model is intended to determine the costs of service by existing networks or a simulated and idealized “efficient” network based on design choices a provider would have in initiating a network today. Both the standard for verification and the permissible uses for a resulting model will depend on the answer to this question. The concerns raised by using a hypothetical network are discussed, infra, pp. 12-13. The existing ILEC networks, built to meet the requirements of a regulatory environment Congress has now substantially revised, were designed prudently to use then-available or developing technology and with the understanding that the ILEC would have a reasonable opportunity to recover its costs. Those are the costs to be recovered for these carriers. The RTC has shown in its earlier comments that the law’s requirements for “specific” and “sufficient” high cost recovery stand in the way of any cost recovery mechanism that is based on anything other than a carrier’s own “specific” costs -- not the costs of an optimal, but fictional, network or another provider’s network. A model based on a hypothetical network is consequently inherently unsuitable for high cost quantification.

II. ANY PROXY MUST BE PROVED VALID IN ITS PREDICTION AND ASSUMPTIONS BEFORE IT CAN BE USED FOR ANY PRACTICAL PURPOSE.

Equally important to the success of any model as a basis for a universal service mechanism is the absolute necessity of thorough testing and evaluation. According to their sponsors, these models were developed to serve a predictive purpose, and thus it is fallacious to pursue policy based on the models if they are not properly tested and

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evaluated for predictive value. A basic elementary econometrics textbook explains the objective of statistical modeling to be threefold: (1) to formulate models in an empirically testable form, (2) to estimate and test the models with observed data, and (3) to use the models for predictive and explanatory purposes.¹⁵

The Commission has received a number of comments regarding the absence of proper validation of the proposed models.¹⁶ Commenters in CC Docket No. 96-98 have also recognized the difficulty surrounding the verification of data used in the proposed models.¹⁷ Thus, thorough testing must verify that the model results appropriately represent that which they are intended to predict. The Commission must not prescribe a policy for small companies that is based upon unverified predictions. Proper testing must involve actual engineering studies of at least a valid sample of Census Block Groups or grids.¹⁸ Otherwise, the accuracy of the model results cannot be determined.

In addition to criticizing the absence of proper verification of the predictions, the RTC and others have expressed concern over the validity of each of the models'

¹⁵ G.S. Maddala, *Introduction to Econometrics*, Prentice-Hall, New Jersey, 1992 at 4.

¹⁶ *See*, for example, Comments of the Colorado Public Utilities Commission at 41, CC Docket No. 96-98, May 16, 1996: "If the basis for evaluation of any cost model is removed, by the elimination of the underlying accounting-based cost models, the cost model cannot be validated. If the Benchmark Cost Model cannot be validated, it is worthless as a tool for determining price ceilings."

¹⁷ *See*, for example, Comments of the Ad Hoc Users Committee at Appendix, Chapter 9, p. 176, April 12, 1996.

¹⁸ *See* Comments of NTCA at 104, CC Docket No. 80-286, October 10, 1995.

underlying assumptions.¹⁹ BCM2 and Hatfield 2.2, similar to earlier versions of the two models, remain replete with unproven assumptions. It has long been posited in economic literature that realistic and accurate assumptions are crucial to the success of any model.

[T]here is no good way to know what to try when a prediction fails or whether to employ a theory in a new application without judging one's assumptions. Without assessments of realism (approximate truth) of assumptions, the process of theory modification would be hopelessly inefficient and the application of theories to new circumstances nothing but arbitrary guesswork. The point is simple: if one wants to use a machine in a new application ... it helps to know something about the reliability of the components of which it is made.²⁰

This point remains true even if one holds to a strict instrumentalist view of methodology, claiming that the goals of modeling are predictive only, and in no way explanatory.²¹

Those who share this view allege that the realism of the underlying assumptions is not of critical importance. Rather, they believe, the model should be judged solely according to whether it can produce sufficiently accurate approximations. Yet even if one grants this view, there still exists a need to verify the model results with actual, observed data. The fact remains that (a) while operating under the current regime, there is no way to verify

¹⁹ See, for example, Comments of Cincinnati Bell Telephone Company at 28, CC Docket No. 96-98, May 16, 1996.

²⁰ Daniel M. Hausman, "Economic Methodology in a Nutshell," *Journal of Economic Perspectives*, Spring 1989, at 121.

²¹ Milton Friedman asserted this idea in 1953: "The relevant question to ask about the 'assumptions' of a theory is not whether they are descriptively 'realistic' for they never are, but whether they are sufficiently good approximations for the purpose at hand. And this question can be answered by only seeing whether the theory works, which means whether it yields sufficiently accurate predictions." Milton Friedman, "The Methodology of Positive Economics", *Essays in Positive Economics*, (Chicago: University of Chicago Press, 1953), at 14.

the “forward-looking” results without the involvement of actual engineering studies as described above, and (b) attempts to verify them with the actual observed costs of existing ILEC networks have not supported their validity as predictions of “specific” and “sufficient” costs for ILEC cost recovery purposes.²²

It is, therefore, also unclear how the sponsors of the BCM2 and Hatfield 2.2 models can claim to make any relative comparison of earlier versions to these modified versions, when quantitative accuracy tests have still not been performed. As Teleport Communications Group stated, “[b]efore adopting any particular [model] . . . the Commission should make every effort to verify its accuracy and reliability.”²³ The RTC agrees, and urges the Commission to ensure that any quantitative analysis performed by one party must be compared to analyses filed by other parties. Southwestern Bell Telephone Company, for example, recently updated its analysis of the models and filed

²² The RTC understands that the National Exchange Carrier Association (NECA) is planning to file comments reporting its quantitative analysis of the proposed models. We expect that this data will show that the models predict higher future loop costs than actual for many LECs, substantially lower for some, and a few near matches. There is no basis to conclude that the relationships will remain stable over time. The RTC urges the Commission to recognize that any predictions which appear to “match” NECA’s cost figures represent data for one time period only. The model will not necessarily yield similar results using data available in the future.

²³ See Comments of Teleport Communications Group at 20, April 12, 1996, footnote omitted. TCG went on to propose a comparison with actual reported costs as the means to verifications. Such tests confuse a match of predictions to actual costs with the overall accuracy of a model designed to predict future cost of a hypothetical network.. This is discussed, supra, n. 22.

its calculated BCM2 average cost per household results.²⁴ Do these results match the BCM2 results calculated by other commenting parties in this proceeding? If the answer is no, the Commission must understand why different parties obtain different results using the same model. This is one of a host of reviews which must occur before even considering the implementation of any of the models for practical purposes.

The RTC has previously emphasized the danger of potential proxy errors, particularly for the small and rural carriers and their customers. The Commission must be wary of models that have yet to be verified as representative of the existing, observed data the model intends to predict.

III. HATFIELD SHOULD NOT BE USED IN ANY FASHION, AS IT IS BASED ON BCM1.

It appears a necessary conclusion that the Hatfield 2.2 should not be used in its present form, as it is based upon data from the original BCM1. The problems inherent in the BCM1 model flow directly into the latest version of the Hatfield through the inputs.²⁵ Furthermore, the BCM1 was clearly designed as a targeting tool, not a pricing mechanism. Unless these discrepancies can be addressed and corrected, use of the Hatfield 2.2 will remain improper.

Several parties have pointed out other problems with the Hatfield methodology in

²⁴ See Responses of Southwestern Bell Telephone Company to the Questions Posed by the Joint Board at Attachment 3, August 2, 1996.

²⁵ Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 4 and 8-9, CC Docket No. 96-98, May 16, 1996.

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earlier comments, and particular emphasis has been directed to the Hatfield 2.2 model's problematic dependence on "hypothetical networks."²⁶ Sponsors of Hatfield 2.2 assert that the model incorporates realistic assumptions which concern "the LECs' ability to adopt and implement efficient, cost minimizing production techniques"²⁷ in constructing the hypothetical networks. However, others have argued persuasively that this approach represents an economic flaw. Dr. Jerry Hausman explained that the Hatfield 2.2 estimates will actually cause an economic loss to LECs which have made historical investments.

Even if actual historical network investment decisions were always completely efficient at the time they were made, improvements in technology will always guarantee that a totally new, hypothetical, network will have a theoretical lower cost than the actual network in place (or otherwise the older technology could be used in the hypothetical network). Thus, basing cost on the current most efficient technology will impart a downward bias on estimates of actual network costs, causing an economic loss to the LECs which made the historical investment. Thus, the study method proposed by Hatfield and Assoc. (March 1996, submitted on behalf of MCI) which claims that the existing network is "irrelevant" (p. 16) is incorrect as a matter of economics and would lead to a downward biased estimate of LEC costs ... the actual costs should be used to set prices, not hypothetical costs.²⁸

²⁶ *Id.* at 2.

²⁷ *Id.*

²⁸ See Affidavit of Professor Jerry A. Hausman at n.4, CC Docket 96-98, May 16, 1996. See also, Comments of the Florida Public Service Commission at 33-34, CC Docket No. 96-98, May 16, 1996. The Florida Public Service Commission pointed out another problematic result of the hypothetical network approach: "Some proxy models, such as the Pacific Bell Proxy Model and the Hatfield Study, may not accurately reflect an incumbent local exchange company's decision making process for determining the economic and technical feasibility of interconnection. For example, when a firm determines its costs for providing an additional service, it will determine the incremental change in costs resulting from its decision to provide the additional service with its

Hatfield 2.2 causes further concern by its use of a pure, incremental costing approach. Both Hatfield 2.2 and the CPM employ an incremental costing approach to the underlying network assumptions of the model.²⁹ The RTC has repeatedly expressed concern over the implementation of a purely incremental costing approach. Incremental costing theories would yield a minimal cost recovery approach, and thus would not yield the sufficient levels necessary to achieve the requirements in the Act that universal service support mechanisms must be specific, predictable and sufficient and preserve and advance universal service.³⁰ Under an incremental pricing theory, it has not been explained how “squeezing” cost recovery on all sides is going to lead to reasonable, affordable and comparable rates.

There is a huge conceptual dilemma that presents itself to incremental costing theory -- the treatment of joint and common costs in excess of incremental costs. This dilemma must be resolved in order to achieve reasonable basic rate levels for high cost, rural, sparsely populated areas because a portion of the costs not clearly addressed by incremental theory constitutes a large percentage of the overall cost recovery burden. Moreover, the Constitution does not permit the Commission to deny carriers the opportunity to recover prudently incurred real costs of their real, existing networks.

existing plant or facilities.”

²⁹ Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 3, CC Docket No. 96-98, May 16, 1996. *See also, Cost Proxy Model: Universal Service Edition - User Manual* at 2-2, May 10, 1996.

³⁰ 47 U.S.C. § 254(b)(5).

Clearly, plunging into a pure incremental cost pricing scheme will not promote universal service.

IV. CENSUS BLOCK GROUPS DO NOT CORRELATE ADEQUATELY WITH RURAL LEC POPULATION PATTERNS.

Both the BCM and the Hatfield models utilize data at the Census Block Group (CBG) level. There is continued concern among the commenting parties that model results based on CBG data cannot accurately reflect actual data specific to individual company boundaries. Therefore, although the BCM2 has been modified in an effort to more accurately reflect the sparsely populated CBGs, this shortcoming has not been effectively overcome.

In answer to the many complaints about the original BCM1 assumption that households are uniformly spread throughout CBGs,³¹ the BCM2 was amended so that it now imposes a road network upon CBGs of less than 20 households per square mile.. Households are now assumed to be uniformly distributed within 500 feet on either side of the imposed road network.³² The RTC believes this to be a substantial improvement over the previous version of the model. However, there will remain companies for which households are substantially farther from the road. Nevertheless, the fact remains that no

³¹ Even MCI, one of the Benchmark Costing Model ("BCM") sponsors, admitted that this assumption used by the model is improper. "First, the BCM assumes that households are uniformly distributed throughout the CBG. This assumption is probably least true in the more rural areas." See Comments of MCI at 11.

³² *Benchmark Cost Model: A Joint Submission by Sprint Corporation and US WEST, Inc.* at 3, July 3, 1996.

thorough and consistent matching has yet been completed, nor testing for accuracy between the Census Block Groups and individual LECs. Additionally, sponsors of the modified Hatfield (2.2) and the BCM2 still have provided no answer concerning what will be done to update Census data in years during which data is not collected.

Pacific Bell's CPM attempts to offer more flexibility than either Hatfield 2.2 or the BCM2, which both adhere to the block approach. The CPM divides a state into a grid of 1/100 of a degree of longitude and latitude polygons, permitting greater or lesser aggregations of data.³³ Analysis can be done at different levels by imposing information on the wire center, CBG, or individual access lines over the grid. By identifying costs for relatively small geographic areas, the cost variation between customers in any particular area can theoretically be reduced so that opportunities for cream-skimming are minimized.³⁴

Comparatively, the CPM design, therefore, offers a methodological step in the right direction. However, despite this methodological improvement, there is still no evidence that the model can appropriately model the highest cost areas without the threat of substantial economic harm to those companies for which the models underpredict. From the little information available, the RTC can only ascertain that the three different

³³ *Cost Proxy Model: Universal Service Edition - User Manual* at 2-3, May 10, 1996.

³⁴ The RTC explained in its comments that disaggregation into smaller geographic areas or density zones should help discourage cream skimming that could impair rural rates and network development. Reply Comments of the RTC at 19, CC Docket No. 96-98, May 30, 1996.

models continue to produce results with the greatest inaccuracy for the highest cost areas.

High cost areas are both unique and varied, and continue to be the hardest to find

predictive variables with which to model "proper cost".

V. THE MODELS NEED FURTHER REFINEMENT TO ACCOUNT FOR TERRAIN CONDITIONS.

The original version of the BCM lacked recognition of the impact of terrain conditions on cost. The BCM1 included a variable for square miles, but neglected to account for the fact that not all square miles are equal. Terrain conditions including mountains, valleys, and water make each individual square mile different from the next, and a sound model must take this into account. All three of the modified models have been amended to include certain terrain variables. The BCM2 adds a variable for the depth at which water becomes an additional cost, and the amount of that additional cost.³⁵ The Hatfield 2.2 includes local geological factors such as rock depth, rock hardness, water table and surface texture, as does the CPM.

While the addition of terrain variables represents a theoretical improvement to the models, the Commission should recognize that the problems inherent in the block group approach diminish the real value of the addition of these variables. The BCM2 uses terrain variables that are mapped to CBGs, or to the CBG area surrounding the road network as explained above. For many small companies, however, the feeder and

³⁵ *Benchmark Cost Model: A Joint Submission by Sprint Corporation and US WEST, Inc.* at 5, July 3, 1996.

subfeeder plant may lie outside this block area. In these instances, the actual terrain conditions over which the feeder and subfeeder plant lie are not properly accounted for in the model.

VI. THE ADEQUACY OF MEASURES TO REFLECT RESIDENTIAL/BUSINESS LINES REMAINS IN DOUBT.

Earlier versions of the Hatfield and BCM depended on Census household data to estimate the number of residential access lines. Most commenters, including the sponsors, argued that recognition of only residential access lines is insufficient, and that consideration for business lines in addition to residential lines is essential.³⁶ All of the models have been altered in some fashion to account for both residential and business access lines. Although the BCM2 still depends on Census household data, the data now includes recognition of business lines in the outside plant architecture. In addition, a lines per household variable was added to account for second-residential lines.³⁷ Hatfield 2.2 incorporates demand for both business and residence service, including second residence lines, through the adjustments to the BCM1's count of households by CBGs. Hatfield 2.2 creates and uses a line multiplier to calculate second residential, business, public and special access lines.³⁸ Finally, the CPM uses its own conversion factors, also for Census

³⁶ See, for example, MCI at 11.

³⁷ *Benchmark Cost Model: A Joint Submission by Sprint Corporation and US WEST, Inc.* at 4, July 3, 1996.

³⁸ Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 6, CC Docket No. 96-98, May 16, 1996.

data, to convert households to residence lines and daytime population to business lines.³⁹

All of the proxy model sponsors have recognized that the inclusion of both residential and business lines is theoretically proper. However, each model addresses the problem of recognizing them in a different way. At present, the RTC does not have a thorough understanding of the nuances of each method. Thus, it is not currently possible to support one method over the other without further study.

VII. THE POPULATION DENSITY CATEGORIES APPEAR INADEQUATE.

The record indicates that as the models have evolved, they have been largely improved methodologically with the addition of several additional population density levels. According to available Rural Utilities Service (RUS) data, RUS borrowers exhibit a density, on average, of 4.65 subscribers per square mile.⁴⁰ Both the BCM2 and Hatfield 2.2 now break Census Block population density into six different categories of households per square mile: 0-5, 5-200, 200-650, 650-850, 850-2,550, and more than 2,550 households per square mile.⁴¹ The lower end of the population density scale in these two models is more highly aggregated than the breakdown offered by the CPM.

³⁹ *Cost Proxy Model: Universal Service Edition - User Manual* at 3-2, May 10, 1996.

⁴⁰ *See 1994 Statistical Report of Rural Telecommunications Borrowers* at xvi, March 1995.

⁴¹ Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 6, CC Docket No. 96-98, May 16, 1996. *See also, Benchmark Cost Model: A Joint Submission by Sprint Corporation and US WEST, Inc.* at 7, July 3, 1996.

The CPM provides for seven different categories of lines per square mile: 0-10, 11-50, 51-150, 151-500, 501-2000, and so forth.⁴²

No proxy model can be expected to accurately predict costs for the most sparsely populated areas if the established density ranges are too large. Should any model be used by the Commission in conjunction with the universal service support mechanism established in this docket or for some other purpose, the density variable breakdown must contain as many different categories as possible.

VIII. THE MODELS' SWITCH/TECHNOLOGY ASSUMPTIONS NEED FURTHER EVALUATION.

The Hatfield 2.2 documentation explicitly states its underlying assumption that all LECs have fully deployed SS7 signaling capabilities throughout the local exchange network.⁴³ Though SS7 signaling capability may be the standard for larger companies, some small, rural companies have not yet deployed SS7. Although LECs face significant market incentives to deploy SS7, the fact that there is wide variation in the degree in which advanced services have been deployed among smaller LECs in high-volume and low-volume applications, and high-demand and low-demand areas must be considered. Hatfield 2.2 fails to recognize this variation, further proving its inadequacy as a tool for modeling the universal service cost recovery requirements of smaller companies.

⁴² *Cost Proxy Model: Universal Service Edition* in DENS_TYP.CSV file, Customer Look-up Module, May 10, 1996.

⁴³ Comments of AT&T, *Hatfield Model, Version 2.2, Release 1* at 3, CC Docket No. 96-98, May 16, 1996.

Pacific Bell's CPM offers additional flexibility in that the "values of the simple cost components are adjusted based on each customer's specific characteristics. These characteristics include technology, [and] switch type . . ."⁴⁴ Recognition of the carrier-specific switch type is clearly theoretically preferable to the general assumption utilized by the Hatfield 2.2.

IX. THE MODEL FAILS TO PROVIDE FLEXIBILITY FOR UNDER-PREDICTIONS OF COST.

Given the continuing questions and flaws that proxy proposals do not adequately resolve, the Commission cannot lawfully impose any of the proposed models on small and rural LECs. Moreover, owing to the wide variations among these companies, the only measure that could accommodate their conditions within a proxy approach would be a wholly voluntary proxy for small and rural LECs. Optional application resolved the same type of concerns when price caps were adopted for the largest LECs.⁴⁵ Should the Commission nevertheless adopt a universal service mechanism based upon the use of a cost proxy model, it must also provide for a process by which carriers can choose to use actual costs and obtain relief for underpredictions of the model. As with the Average Schedules, no model can adequately predict for all carriers without exception. Similarly, LECs must be able to elect actual cost without the uncertainty, expense and delay of regulatory proceedings.

⁴⁴ *Cost Proxy Model: Universal Service Edition - User Manual* at 2-3, May 10, 1996.

⁴⁵ Order on Reconsideration, (CC Docket No. 87-313), 6 FCC Rcd 2642 (1991).

A complex rebuttal or waiver process would be an unfortunate and unlawful safety valve which would raise the cost of universal service by forcing small and rural LECs to litigate solely to obtain the “sufficient” support required by the 1996 Act.

The RTC, therefore, believes that if a proxy is adopted, it must at the very least allow relief at the option of the carrier for underpredictions of actual costs. If the Commission opts to utilize one of the proposed models, use of the proxies should be initiated on a voluntary basis only. A rebuttal process that would most likely require a large number of waiver proceedings and add to the cost of universal service does not comport with the standards for universal service commitment established in the Act.